

Improved Lunar and Martian Regolith Simulant Production, Phase I

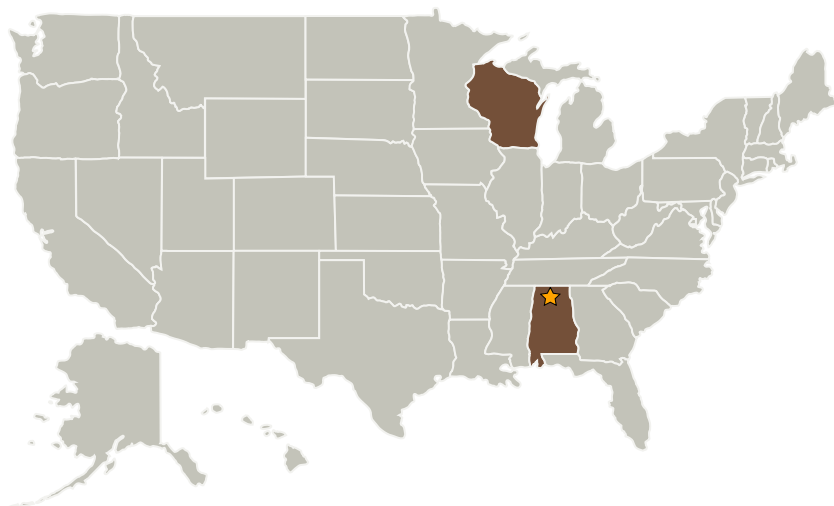
Completed Technology Project (2005 - 2005)



Project Introduction

NASA's new exploration initiative created immediate need for materials science and technology research to enable safe human travel and work on future lunar or Martian long-duration missions. To conduct this research, NASA must have lunar and Martian regolith simulant for materials experiments and prototype testing of transportation equipment, advanced life support systems, and in situ resource processing. This SBIR will conduct a feasibility study on a new generation of lunar and Martian simulants with improved composition and mineralogical analysis. For lunar regolith, Orbital Technologies Corporation (ORBITEC) proposes to recreate the JSC-1 material and study post-production processes to add additional percentages of glass particles to improve composition. A study to assess the feasibility of creating a lunar highlands-type simulant will also be conducted. For Martian regolith, ORBITEC will mine the raw material for the JSC Mars-1 simulant with an improved extraction process to avoid the contamination of the soil that resulted in the non-Martian magnetic component. Additional grain-size particles will also be prepared and combined with the material to improve its grain-size distribution comparison. These innovations combined with the well-documented and received original JSC-1 and Mars-1 source materials will produce simulants that will assist NASA on its future exploration quest.

Primary U.S. Work Locations and Key Partners



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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center
(MSFC)

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

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Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Orbital Technologies Corporation	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Madison, Wisconsin

Primary U.S. Work Locations

Alabama	Wisconsin
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Marty Gustafson

Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
 - └ TX13.4 Mission Success Technologies
 - └ TX13.4.1 Mission Planning